

Title (en)  
CHARGING APPARATUS AND VEHICLE

Title (de)  
LADEVORRICHTUNG UND FAHRZEUG

Title (fr)  
APPAREIL DE CHARGE ET VÉHICULE

Publication  
**EP 3139465 A1 20170308 (EN)**

Application  
**EP 16186238 A 20160830**

Priority  
JP 2015174960 A 20150904

Abstract (en)  
A charging apparatus that charges an electric storage device with electric power from an alternating-current power supply includes: a first converter that converts alternating current from the power supply into direct current and outputs it; a second converter that converts a voltage from the first converter into a voltage of the electric storage device and outputs it to the electric storage device; and an electronic control unit configured to control the first and second converters to control charging electric power supplied to the electric storage device, and to continue charging of the electric storage device while limiting an upper limit of charging electric power to a larger extent (S21, S22) when the number of times that the voltage on the output side of the first converter is out of a prescribed range exceeds a prescribed value during charging (S20), than when the number of times does not exceed the prescribed value during charging (S20).

IPC 8 full level  
**H02J 7/00** (2006.01); **B60L 11/18** (2006.01); **B60L 50/13** (2019.01); **H02J 7/02** (2016.01); **H02J 7/04** (2006.01); **H02M 1/32** (2007.01)

CPC (source: CN EP US)  
**B60L 50/13** (2019.01 - EP US); **B60L 50/40** (2019.01 - EP US); **B60L 53/14** (2019.01 - EP US); **B60L 53/20** (2019.01 - CN EP US); **B60L 53/22** (2019.01 - EP US); **B60L 53/63** (2019.01 - EP US); **H02J 7/007182** (2020.01 - EP US); **H02J 7/02** (2013.01 - CN EP US); **H02J 7/04** (2013.01 - EP); **B60L 2210/10** (2013.01 - US); **B60L 2210/30** (2013.01 - US); **H02J 2207/20** (2020.01 - EP US); **H02J 2310/48** (2020.01 - EP US); **Y02E 60/00** (2013.01 - EP US); **Y02T 10/70** (2013.01 - EP US); **Y02T 10/7072** (2013.01 - EP US); **Y02T 10/92** (2013.01 - EP US); **Y02T 90/12** (2013.01 - EP US); **Y02T 90/14** (2013.01 - EP US); **Y02T 90/16** (2013.01 - US); **Y04S 10/126** (2013.01 - EP US)

Citation (applicant)  
JP 2014017917 A 20140130 - TOYOTA IND CORP

Citation (search report)

- [Y] JP 2009060683 A 20090319 - HITACHI KOKI KK
- [Y] EP 2701267 A1 20140226 - TOYOTA MOTOR CO LTD [JP]
- [A] US 2003126474 A1 20030703 - SAWYERS THOMAS P [US], et al
- [A] US 2012153895 A1 20120621 - GALE ALLAN ROY [US], et al

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
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DOCDB simple family (application)  
**EP 16186238 A 20160830**; CN 201610750486 A 20160829; JP 2015174960 A 20150904; US 201615238189 A 20160816